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PROVISIONAL SPECIFICATION.

A Portable Bath, Chiefly Applicable for Medical Purposes.

I JOSIAH WEBBER Architect Trafalgar Lodge George Place Hyde Vale Greenwich, S.E. do hereby declare the nature of this invention to be as follows :—

A portable Bath by means of which hot and cold air, hot and cold water, electricity, oxygen, ozone, medicated vapour, &c., may be administered under entirely new conditions, including special arrangements for medical supervision and control.

It consists of a chamber composed of wood, metal, or other suitable material, constructed with double walls for the passage of the heated air. There is a cistern in the canopy by means of which hot or cold water may be applied while the bather is surrounded by the heated air.

There is an arrangement for the application of heat and cold to the spinal centres, with a special apparatus for local treatment to the eye, throat, or ear.

The lower part of the bath consists of two chambers, one for airing linen, and the other for the treatment of infected clothing. The furnace is heated by gas, oil, or spirit.

The way in which the various agents named in the opening sentence are applied is as follows :—For the hot-air supply I construct at one end of the Bath a furnace, or heating chamber, so arranged that the fresh air—after being purified by passing it through perforated zinc trays filled, one with wool, and the other with charcoal—shall be heated to an unusally high temperature, and then projected in continuous waves over the body of the bather. After the air has done its work, and has become loaded with the exhalations from the skin, it is drawn off through the spaces between the hollow walls of the bath casing, and carried to the furnace direct, where it mingles with the products of combustion, and is discharged by the same flue.

Attached to the heating are appliances for the reception of chemicals for the generation of medicated vapours, of oxygen, or of any other of the various gases which the medical attendant may consider the most suitable to the case, and so arranged that, while the body is enveloped in a medicated atmosphere for external treatment, a differently charged atmosphere for internal treatment, may, at the same time, be administered through the organs of respiration.

Cold air is applied by means of pipes running through an ice-chamber, and connected with a fan or bellows for projecting the air upon any part of the patient requiring treatment, and by an apparatus fitted at the back of the bath any of the nervous centres in the cerebro-spinal axis may be operated upon in such a manner as to overcome the difficulty hitherto experienced by the medical profession in localizing the application of heat and cold to the spinal centres.

Electricity is applied in the usual way, but under more favourable conditions. The wires are fixed in the bath, and connected with binding screws at the outside, and when wanted the operator has but to attach the wires of the battery to the binding screws, and the whole is ready for action. By means of the spinal apparatus above mentioned the electrodes can be accurately fixed at any part of the spine, or, by means of copper plates attached to the foot-rest the charge can be taken from the spine to the feet if desired.

Dated this 18th day of February 1889.

JOSIAH WEBBER.

[*Price* 1*s.* 1*d.*]

COMPLETE SPECIFICATION.

A Portable Bath, Chiefly Applicable for Medical Purposes.

I JOSIAH WEBBER of Trafalgar Lodge George Place Hyde Vale, Greenwich Architect do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement :—

The object of my invention is to provide a portable Bath, by means of which hot and cold air, hot and cold water, electricity, ozone, oxygen, medicated vapour, &c., may be administered under entirely new conditions, and by which higher therapeutic results can be obtained than by the ordinary portable baths in present use.

To effect this I construct a chamber of wood, metal, or other suitable material with double casings or walls, leaving a space of about half an inch between the two walls for the circulation of the heated air, and for its extraction after it has become vitiated by the exhalations from the skin, as hereinafter described.

The dimensions vary according to the requirements but the most convenient size will be about six feet six inches in length two feet five inches in width and about four feet in height. The interior is fitted with a shifting seat which may be fixed at any height required, and may be adjusted for either a sitting or a reclining posture ; there are doors on both sides of the bath, and extending across the bath from door to door is a flat slab or table, the same width as the doors, which can be moved aside to allow of the patient entering the bath ; after having taken his seat, he closes the door, draws the table into its place, and with the exception of the space above the seat the bath is closed ; this space is covered by an apron piece, which has an opening for the neck, and is fitted with armholes and covers complete ; the top of the bath over the foot rest is fitted with a hinged lid cover, to allow of easy access to the lower extremities in cases of gout, rheumatism, &c., without disturbing the position of the patient, or exposing the rest of the body.

The heating apparatus is placed at the end of the bath, and is specially constructed with a view to securing a higher temperature than usually obtains in baths of this description.

It consists of an iron casing, measuring approximately 14 inches by 18 inches and 6 inches in thickness, with a central diaphragm dividing it into two chambers 14 inches by 18 inches by 3 inches ; in the diaphragm are placed tongues of metal $1\frac{1}{2}$ inches wide, and stretching across the two chambers ; they are placed $1\frac{1}{2}$ inches apart, in alternate rows, and are saddle-backed ; one of these chambers I call the furnace-chamber, and the other the air-chamber ; the furnace chamber is heated by gas, oil, or methylated spirit, but I consider gas with an atmospheric burner the best ; by conduction, the metal tongues fixed in the diaphragm convey the heat from the furnace to the air-chamber, where the air is brought to a very high temperature, without its purity being affected in the slightest degree ; the diaphragm dividing the two chambers also aids in radiating heat, and raising the temperature of the air as it passes over its surface ; the saddle-backed form of the metal tongues acts by bringing the heat-wave in the furnace-chamber into close contact with the diaphragm, while the same principle obtains on the other side with the incoming volume of cold fresh air.

Attached to this apparatus is a purifying chamber, containing trays of perforated zinc, packed first with cotton, or silicated wool, to arrest dust and organic germs, and next with charcoal for the absorption of noxious gases ; the lower part of the air-chamber is open to admit the cold purified air, and the upper part is also open, with a deflector fitted at the top, at an angle of 45 degrees, to project the heated air upon the body of the bather.

The furnace-chamber is hermetically closed so that none of the products of combustion can by any possibility enter the bath : there is fixed in the heating chamber a partition by means of which the heat, after ascending through the

spaces left by the metal tongues, is made to descend and pass into a flue at the bottom of the chamber, which flue is first carried round the bath, in order that its heat may be fully utilized in its course by radiation, and then brought back to the furnace, where being heated at its outlet the draught is quickened, before entering the chimney, or passing into the outer air.

The fresh air is drawn into the purifying chamber, where after being cleansed of all impurity, it passes into the heating chamber, from whence it is projected in continuous waves over the body, charged with the special chemical the medical attendant may consider most suitable to the case ; after the air has done its work, and has become loaded with the exhalations from the skin, it is drawn out of the bath into the space between the two walls, through perforations at the upper part of the inner wall, and conveyed by a pipe to the furnace-chamber, where it mingles with the products of combustion and is discharged by the same flue. In cases where treatment of the respiratory organs by inhalation is required, the atmosphere is brought by a pipe from the heating chamber to the mouth of the bather direct, uncontaminated by the emanations from the skin, or by the medicated atmosphere by which the body may be surrounded, thus enabling the doctor to secure the double advantage of drug medication through the skin by means of medicated vapour, and internal treatment at the same time by a differently charged atmosphere through the organs of respirations.

To prevent loss of heat by radiation I construct the other parts of the bath in two thicknesses and place between them a layer of silicated or other non-conducting material. Where the heat is greatest I construct the inner and outer walls of the panels of narrow strips 3 inches by $\frac{1}{4}$ inch, running in grooves at each side, so that they may be closed up again should shrinkage occur ; for effect it would be better to overlap the outer strips as louvres, and scollop the lower edge.

The inner walls are made fireproof by being painted with asbestos paint, or other fire-resisting material.

The cisterns for hot and cold water are placed in a canopy over the head of the bather, the hot water in which is heated by a pipe from the furnace chamber ; the service pipes are so arranged in the bath that the patient may be treated alternately with hot or cold water in the form of a shower, a descending douche, an enclosing spray, a wave douche, an upcast, or a moveable spray, at the same time that the body is enveloped in the heated air, or, either appliance can be used for toning the skin, and closing the pores before quitting the bath.

There is a double roof to the canopy forming a chamber, to which is attached an extraction pipe by means of which—if the bather be a smoker, the smoke can be collected and carried away without fouling the air of the apartment. The sides of the canopy are fitted with waterproof blinds, which can be raised to allow a freer play of light and air, or, to enable the doctor to examine the patient with a greater degree of ease and comfort : in front of the bather, but attached to the canopy, is a fan, or punkah, with attachments to the side of the bath, allowing it to be worked either by the bather inside, or by an attendant outside, by means of which a plentiful supply of fresh air can be obtained should there be any feeling of faintness or indisposition while the patient is taking the bath.

When it is necessary to cool the head, and the ordinary wet towel is insufficient, or the process of wetting the hair would be considered by the medical attendant inexpedient or dangerous, the patient can be relieved by the application of cold air gently playing around the head from a circular perforated pipe, which is attached to a coil in an ice chamber, and through which the air is propelled by a fan or ordinary pair of foot bellows, which can be worked either by an attendant outside the bath or by the bather himself inside.

Around and above the seat perforated pipes are fitted, by means of which cold dry air from the same ice-chamber may be projected over the body of the bather, either during the bath, in alternations of heat and cold, or, in lieu of water may be used for toning the skin and closing the pores before quiting the bath.

At the back of the bath is an arrangement for applying heat and cold to the spine-

Webber's Portable Bath, Chiefly Applicable for Medical Purposes.

It consists of an upright rod upon which are placed two moveable arms or runners, so arranged that they can be fixed to the rod at any height required; to these runners are attached two pipes, one leading to the hot-air chamber, and the other to the ice-chamber; the operator is thus enabled to apply heat to one section of the spinal cord, and cold to another part, at the same time that the patient is undergoing the ordinary bath treatment. The great difficulty experienced in localizing the action of heat and cold to the spinal ganglia, in the usual way, is overcome by the peculiar construction of the appliances which are attached to the hot and cold air pipes, and which may be fixed exactly over that part of the spine to which the treatment is specially directed, they are small chambers about 3 inches in diameter, fitted with a double pipe in one, and with a wave pipe in the other, and the top of the chamber is provided with an outlet pipe, so that the air having been projected against the spine is forced out of the chamber into the pipe at the top, and is passed away out of the bath without being allowed to play upon any other of the spinal centres than those indicated. This complete control over the nervous centres gives the medical practitioner a power over the entire organism which enables him to deal with certain states of disease not amenable to treatment in the baths as at present constructed.

The spinal apparatus is also used for applying electricity to the patient while undergoing the bath treatment: one electrode is applied to the spine, and fixed there by the runner being screwed to the vertical rod, the other electrode being attached to a jointed arm can be applied to any other part of the body, or, by means of a metal plate being fixed to the foot-rest the current can be taken through the feet if desired; the wires are fixed in the bath, and carried to binding screws at the outside, and when wanted the operator has but to attach the wires of the battery or induction coil to the binding screws, and the whole is ready for action.

Beneath the seat is a chamber which is used as a drying closet for airing linen, or it may be used for drying the clothes of the bather while he is undergoing the operation of the bath: this closet is fitted up with perforated zinc trays and ventilating pipes, and is protected from the perspiration of the bather by being cased in zinc, or other suitable waterproof material.

Beneath the foot-rest is a disinfecting chamber fitted with racks and perforated shelves, heated by radiation from the inner wall of the furnace, and by the flue pipes which pass beneath it, and also by a current of dry hot air from the air-chamber, which if desired can be charged with disinfecting chemicals or gases, and which, after permeating the chamber is drawn off by an extraction pipe and carried back to the heating apparatus, where it is consumed in the furnace.

To those who are accustomed to go into infected districts, such as ministers, doctors, district visitors, and the like, and who fear lest they should carry disease in their clothing to their own houses, this apparatus will be a great safe-guard; there are also many things in common use, such as books from a public library, coin, new clothing, &c., that could be rendered harmless by disinfection; the cost would be next to nil, and the protection absolute.

In case of rheumatism, gout, or sprain, local treatment may be applied to the extremities without undressing the patient, or forcing him to go through the entire operation of the bath, by passing the limb through apertures arranged for that purpose in the walls of the bath; the patient may thus be undergoing local treatment clothed and reclining comfortably in the bath as on a pleasant lounge, or, he may at the same time be undergoing the process of inhalation, by the pipes laid on from the air-chamber.

To obviate the objection raised by medical men to the fœtid vapourous atmosphere of the ordinary sweating bath I have designed an arrangement by which the perspiration is caught as it falls from the bather in a zinc tray fixed under the seat and over the drying closet, and is at once carried away by means of a pipe and tap fixed outside the bath. There is a contingent advantage in this arrangement, from a diagnostic point of view, as the perspiration, instead of being thrown away, can be collected and preserved for medical analysis, if required.

Pipes are laid on from the hot air chamber to the head of the bath for local treatment to the eye, throat, and ear : by these pipes warm pure air is brought direct to the mouth from the hot air chamber, uncontaminated by the exhalations from the body of the bather, and being moreover purified from all organic matter in the purifying chamber there is not that burnt flavour so noticeable in uncleansed atmospheric air when brought in contact with a treated metal surface ; medicated vapours are administered also by the same appliances by placing in the course of the current the special chemical indicated.

Hinged to the table top is an adjustable reading desk, so arranged as to lie flat upon the table when not required for use.

Attached to the canopy, behind the punkah, is a vessel fitted with a spray-producer and india rubber tube ; this vessel is filled with water, and on pressing a button conveniently placed in the bath, a fine spray is made to fall upon the head and face of the bather. As one fixed position, either sitting or reclining, becomes irksome after a time, I have endeavoured, although the space is limited, to arrange for several changes of position : the arms can rest upon the arm rests placed at each side of the bath, or may rest upon the arm holes, but for the lower extremities, which are generally the most tired, I have allowed for a great number of different movements ; there are no less than four foot rests, and two adjustable leg rests ; these latter are fastened to the front of the seat, and move laterally, right or left, on runners ; they are but 3 inches wide, and when not required are pushed to the side where they take up but little room ; they are jointed in the centre, and may be adjusted at a convenient angle to flex the knee and support the limb, or be made to lie flat, on a level with the top of the foot rest.

At the side of the bath is fixed an index and regulator connected by a rod with the gas tap in the furnace-chamber, by means of which the bather is enabled to increase or lower the temperature of the bath at will.

The portability of the bath has been carefully thought out. In order to facilitate the putting together, and the putting apart, I have designed the structure so that the canopy, being fixed with dowels only to the four posts, can be lifted with ease, and separated from the rest of the bath ; the body is divided into two sections, each of which can pass readily through any ordinary doorway, while the plinth being provided with rollers the whole may easily be moved from place to place, or even brought close up to the bedside of the patient.

Description of Drawings.

Drawing No. 1—is a side elevation drawn to a scale of one inch to the foot shewing the general arrangement of the bath, the detail of which will be more readily understood by a reference to the following section.

Drawing No. 2—is a longitudinal section shewing the general arrangement of the interior. For the sake of portability the structure is divided into three main parts ;— the seat part marked A, the canopy above marked H, and the foot part marked C ; the posts of the canopy are dowelled with wooden pins to the frame of the seat, and can be fixed in position with the greatest ease ; the width of the several parts will allow of their passage through any ordinary sized doorway, and the plinth being fitted with ball castors the whole may be moved bodily without difficulty from place to place. The seat marked O and the back rest N, are placed at a convenient angle, and with the arm-rests M, are designed to afford the patient as much rest and ease of position as is possible while undergoing the bath treatment. There are two doors one on each side marked B, and when the bath is in position, the door that is not required will be fixed to the frame of the seat to give rigidity to the whole, and on that side the different pipes & appliances hereinafter described will be distributed.

Over the space between the two doors is a table marked F upon which is fitted a reading desk so hinged to the table as to lie flat when not required for use ; this table is fitted with runners enabling it to be drawn over the foot part to allow of the

opening of the door, and the entrance of the bather : being seated he closes the door, replaces the table, and draws the apron up to his neck, fastening it by a catch to the wooden rail in which is the aperture for the head, and the bath is completely closed. The apron piece is composed of waterproof material, such for instance as Willesden cloth or any other suitable non conducting material, or, may be of wooden strips similar to the rolling shutters in common use : it is provided with arm-holes and flaps complete, and when not in use is coiled up on a spring roller, placed in the quadrant space below the outer line of the table edge. To avert the leg-weariness inseparable from all baths where the position of the bather is somewhat constrained, I have allowed for several changes of position : there are no less than four different foot-rests marked S, and two leg rests marked R : these latter are fixed to the seat by runners, and jointed in the middle ; the further ends butt against a fillet on the foot-rest, which keeps them in position : being only three inches in width they are easily moved from one place to another, and when the knees are tired they can rest the leg by lying flat across the space from seat to foot-rest, and when not required for use pack in a very small compass at the side of the bath.

Beneath the seat is a chamber marked Q which is used as a drying closet for airing linen, or it may be used for drying the clothes of the bather while undergoing the operation of the bath ; this chamber is fitted up with perforated trays, and is protected from the perspiration by being covered with zinc or other suitable waterproof casing.

Under the seat and over the drying closet is a zinc tray marked P, so constructed as to catch the perspiration as it falls from the body of the bather which is then by means of a pipe and tap carried out of the bath direct : there is a double advantage in this arrangement, the bather is not surrounded by a fœtid vaporous atmosphere, as in the ordinary sweating bath ; and the perspiration can be collected for medical analysis, if required.

The heating chamber, D, is placed at the foot of the bath, the full detail of which is given on drawing 6. Close to the furnace is a disinfecting chamber T, heated by radiation from the furnace, and also by a current of hot dry air, brought by a pipe from the air chamber : the air is afterwards drawn off by another pipe, and consumed in the furnace chamber. The canopy H, with the cistern J, is given in detail on Drawing No. 5. The spinal apparatus G, is detailed on Drawings Nos. 4 and 7.

Drawing No. 3—shews the plan of the bath and a top view of the same : the lettering is the same as in the longitudinal section, Drawing No. 2 : and the scale is the same, *viz.* : one inch to one foot : A is the seat part ; B the doorway ; C the foot part ; D the heating chamber ; E the hinged flap top to the foot part ; F the reading desk ; I the quadrant under which the apron piece is rolled ; M the arm rests ; N the back rest ; O the seat ; R the leg rest ; S the foot rest ; A^1 the apron piece ; A^2 the arm holes ; and A^3 is the aperture for the head.

Drawing No. 4—is an enlarged drawing of the seat part, marked A on the general plan :—the scale is two inches to one foot :—the capital letters are the same as those given in the general plans and section : the small letters refer to this drawing only. The seat O, and the back rest N, are the same as shewn on Drawing No. 2 : (*a*) (*a*) are notched posts for fixing the seat at any height required ; P is the zinc tray for catching the perspiration, and (*b*) is the tap for running it off (*c c c*) are air pipes connected with the ice-pail : (*d*) (*e*) are water pipes connected with the cisterns (J) in the canopy H ; (*f*) is the apparatus for inhalation, connected by pipes (*g*) with the hot air chamber ; (*h*) is a jointed bracket by means of which the appliances for the eye, throat, and ear, are accurately adjusted : these appliances are given on a larger scale on drawing No. 7 : (*i*) is a dial by which the gas burner in the furnace can be regulated by the bather, without quitting the bath ; (J) is a dial for regulating the enclosing spray from the perforated pipes marked (M) ; K is a knob, by pressing which the spray from a diffuser placed in the front part of the canopy is made to fall upon the head and face of the bather ; (*l*) is a dial for regulating the cold air coming from the ice pail ; F is the table

and reading desk ; (*n*) binding screws for electric wires ; A^1 is the section of apron piece ; A^3 aperture for the head ; L, perforations in the inner wall of the bath for the extraction of the vitiated air, which is drawn through the spaces Y between the two walls, and conveyed by the channel at the bottom of the bath to the furnace chamber, where it is consumed : (*q*) is a pipe conveying hot air from the foot to the head of the bath (*r*) is a valve for regulating same (R) is the leg rest attached by a runner to the front of seat. (*u*) is an upcast jet and rose ; (*t*) is a lever by which the bather can work the foot-bellows placed outside the bath for driving cold air through the ice-pail. Q is the drying closet for airing linen, or, for drying clothes, perforated trays for holding same.

G is the spinal apparatus, by means of which hot and cold air can be applied to the spinal centres. It consists of an upright rod (*v*. upon which are placed two moveable runners v^1 and v^{11}) fitted with screws, by which they can be secured to the rod at any part of the spine requiring treatment : to these runners are attached two pipes, one from the hot air chamber, the other from the coil fitted in the ice chamber, enabling the operator to apply heat to one section of the spinal cord, thereby increasing the energy of the nervous ganglia ; and cold to another part of the spine, thereby lessening its activity, at the same time that the patient is undergoing the ordinary bath treatment. The difficulty experienced in localizing the action of heat and cold when applied to the spinal ganglia in the usual way is overcome by the peculiar construction of the appliances *w* and *x*, which are attached to the hot and cold air pipes :—they are small chambers, about 3 inches in diameter, fitted with a double pipe in one, and a waive pipe in the other : at the top of the chamber is fixed an outlet pipe, so that the air having been projected against the spine is forced out of the chamber into the pipe at the top, and is passed away out of the bath, without being allowed to play upon any other of the spinal centres than those to which the treatment is specially directed. There is an opening down the centre of the back-rest, through which the appliances are brought close up to the back of the bather.

The inlet and outlet pipes (*y*. and *z*. are telescopic, to allow of the adjustment of the appliances to any part of the spine. Enlarged details of these spinal appliances are given on drawing No. 7.

Electricity is applied to the patient by means of the spinal apparatus just described : one electrode is applied to the spine, by being attached to one of the runners (v^1), which is screwed to the vertical rod (*v*) ; the other electrode is attached to the jointed arm (*p*) and applied to any other part of the body as may be required, or the hand electrode (*s*) may be used instead ; the wires are fixed in the bath, and carried to binding screws (*m*) at the side of the bath, and when required the operator has but to attach the wires of the battery or induction coil to the binding screws, and the whole is ready for action.

Over the head of the bather is fixed a small copper rose for water (Z^1) but should it be inexpedient or dangerous to use water, the head can be cooled by air brought from the ice-pail and projected from the copper coronal, or ring, (Z^1) which is perforated with needle holes on the underside.

The small handrose hung at the side of bath marked (*e*) is intended for applying water, or air to the front part of the body and to the lower extremities ; it is attached by an india-rubber pipe to the air pipe (C^1), or to the water pipe (m^1).

Drawing No. 5 is an enlarged section of the head of the bath, or canopy : the scale is two inches to one foot. A is the front of the canopy ; and B the back : C waterproof roller blinds of Willesden cloth, or other suitable material ; D perforated ceiling ; E bracket of punka ; F fir bearers ; G passage way to H, smoke chamber in roof ; I passage way round J, hot and cold water cisterns ; K extraction pipe for smoke leading to chimney, or the outer air ; L shower ; M douche ; N wave ; O. P water pipes. The only feature of novelty in this arrangement—beyond the general combination of parts, is the way in which the tobacco smoke—if the bather be a smoker—is collected in the roof of the canopy, and drawn off without fouling the air of the apartment in which the bath is standing. Smoking in a bedroom is not wholesome, and the odour of stale tobacco-smoke is extremely offensive, if not injurious to an

invalid : I have endeavoured to minimize the evil by constructing the canopy in the way and manner shown and described.

Drawing No. 6—shows the heating apparatus in plan, section, and elevation ; drawn to a scale of two inches to one foot. It is placed at the foot of the bath, and is marked D on the general plan, Drawing No. 3; and general section, Drawing No. 2. In the lettering the block capitals are the same as those given in the general Drawings Nos. 2 & 3.

The heating apparatus consists of an iron casing, measuring approximately 18 inches by 6 inches ; divided by a diaphragm F into two equal chambers 3 inches wide, U and V :—in the diaphragm are placed tongues of metal G, 1½ inches wide, and stretching across the two chambers ; they are placed 1½ inches apart, in alternate rows, and are saddle-backed ; one of these chambers U, I call the furnace chamber, and the other, V, the air chamber : the furnace chamber is heated by an atmospheric gas burner H, & by conduction, the metal tongues passing through the diaphragm convey the heat from the furnace to the air-chamber, where the air is brought to a very high temperature, without its purity being affected in the slightest degree ; the diaphragm also aids in radiating heat and raising the temperature of the air as it passes over its surface, and the saddle-backed form of the metal tongues forces the heat wave in the furnace chamber into closer contact with the diaphragm ; while the same principle obtains on the other side with the incoming volume of cold fresh air.

Attached to this apparatus is a purifying chamber, W, containing 2 trays of perforated zinc, I and J, the first packed with cotton, or silicated wool, to arrest dust and organic germs, and the other with charcoal, for the absorption of noxious gases : the lower part of the air chamber is open at K, to admit the cold purified air ; and the upper part at L is also open, with a deflector M fixed at the top at an angle of 45 degrees to deflect the current in the direction shewn by the arrows in Figure D.

At the top of the apparatus are attached two metal trays, one on either side, fitted with porcelain cups for the reception of chemicals, marked X X in figures D B & A.

In the centre of the fire chamber is fixed a cross partition, marked IV on figure B, with an opening at the top, marked P, by means of which the heat, after ascending through the winding spaces between the metal tongues, is made to descend in the direction of the arrows, and pass into a flue at the bottom of the chamber, marked R ; which flue is first carried round the bath, that its heat may be fully utilized by radiation, and is then brought back, and carried over the top of the furnace, as shown at S Figure D, where, being heated at its outlet, the draught is quickened before entering the chimney, or passing into the outer air.

Drawing No. 7—shews, on an enlarged scale about half full size—some of the various appliances hereinbefore described, and also the system of construction adopted in places where the heat is unusually severe, and where panelling constructed in the usual way would be apt to shrink and crack. To obviate this I construct the panels as shewn in Section A, and elevation B, of two layers of thin wood, C, and D, cut in narrow widths, with a layer of silicate wool, marked E, or other suitable non-conducting material, placed between. The inner and outer casings are placed in grooved frames, and kept in position by screwed mouldings : should the baths shrink, they will not split, or warp, and the shrinkage is quickly remedied. The outside laths, marked C, are lapped, as shewn in section, and whatever shrinkage might occur there is unnoticed ; while the inner laths being butt-jointed, or edge to edge, would show the shrinkage by open joints : all that is required is to unscrew the top moulding and gently press the laths down the grooves, until all the joints meet, and then replace the moulding. This system of construction gives a light, durable, inexpensive panel, and I have found it very suitable for my hot air bath. The outside laths may be left plain or ornamentally cut on the lower edge, as shewn in drawing.

Figure C is a view of the apparatus for applying cold air to the spine, as before described and shewn in drawing No. 4.—A is a circular casing, about 3 inches long,

in which is fixed a pipe B, connected with a pipe from a coil fixed in an ice chamber outside the bath : the air is propelled by a foot bellows, or a rotary fan, against the spine, and then escapes by the pipe D, and is carried out of the bath without being allowed to act upon any other part of the spine than to that which the treatment is directed. E is an arm of the runner attached to the vertical rod as shewn in Drawing 4, and moves backward or forward as may be desired. When placed in position, so that the edge F is pressed close to the spine, the arm is firmly fixed by a screw to the runner. The mouth of the pipe B is flattened as shewn at G, so that the cold air impinges on the spine is a sort of wave, which may be either continuous, or intermittent, as the medical attendant may direct.

The casing may be constructed of wood, ivory, vulcanite, or any suitable material, but if metal is employed it must be covered with flannel, or some other non-conducting material. The pipes which bring the air from the ice chamber, and afterwards out of the bath, are telescopic, to allow of the vertical movement of the runners.

Figure D is an isometrical projection of the apparatus for applying heat to the spine. Its attachment to the vertical rod is similar to that described for figure C, but the form of the casing is different, being flat at the base ; the hot air is projected from a double pipe, instead of a wave, that being considered the more desirable way of applying heat to the cerebro-spinal axis. A is the semi-circular casing, with part of the top removed to allow a view of the internal arrangement : B. is the double pipe, connected with a pipe C. from the hot-air chamber of the heating apparatus : D. is the arm of the runner attached to the vertical rod ; and E. is the pipe which carries the spent hot-air out of the bath.

Figure E. is a side view of the apparatus marked (*f*) in Drawing No. 4. It is used for the treatment of the throat, eye, or ear, and is brought into position, and retained there by means of the jointed arm marked (*n.*) in Drawing No. 4. A. is the casing, part of which is removed to shew B, the pipe from the hot-air chamber ; and D. a cup for chemicals. C. is a pipe for carrying off the breath when used as an inhaler ; the reflexed curve being given backwards, and high, to prevent the spent hot-air from playing upon the face of the bather.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed I declare that what I claim is :—

1 :—The invention of a combination of parts some of which are in common use, together with some other parts which are entirely new, in the form and manner hereinbefore specified and illustrated by the accompanying drawings the combination forming a portable hot air bath of improved construction by means of which the medical practitioner can apply heat and cold to the skin and to the nervous centres with a greater certainty of action and with a more direct control that has hitherto been obtainable.

2 : The chief features of novelty in this combination are

a.—The appliances for the application of hot and cold dry air in lieu of hot and cold water, in the manner and for the purposes hereinbefore specified.

b.—The spinal arrangement by means of which heat and cold may be applied to the spinal ganglia while the patient is undergoing the ordinary bath treatment.

c.—The disinfecting chamber where the clothes of the bather may be purified and disinfected by the same furnace which heats the bath as herein specified.

d.—The canopy as a new combination only of things which are not new but parts of things already in common use.

e.—The method and appliances by which the circulation is effected and the vitiated air extracted by means of the hollow casings and pipes as hereinbefore specified.

f.—The apparatus for applying electricity to the patient in so far only as relates

to the spinal apparatus with its jointed arms for fixing the electrodes with absolute accuracy upon any part of the patient as may be directed.

ff.—The heating apparatus with its purifying chamber, its hot air chamber, and chemical appliances, as a new combination only of parts some of which are already in common use.

g.—The minor combination of appliances for local treatment to the eye, throat, or ear, by pure dry hot air from the hot air chamber of the heating apparatus or by medicated vapour, as may be required.

h.—The method of dealing with wood panels in cases of very high temperature, by using laths in the inner and outer walls, and placing a layer of silicated wool, or other nonconducting material between them, as herein specified.

i.—The novel arrangement of construction as relates to the portability of the bath, such as dividing the body and the canopy into three parts, each of which is easily adjusted and taken apart again and passed without difficulty through any ordinary doorway.

j.—The combination of appliances by which the patient is enabled to enjoy local treatment to the extremities, as in cases of gout, rheumatism, or sprain, without the trouble of undressing, or being compelled to go through the entire operation of the bath, and the facilities afforded for the use of the other appliances conjointly.

k.—The appliances for conveying the perspiration out of the bath, and for collecting the same for medical analysis.

Dated this 18th day of November 1889.

JOSIAH WEBBER.

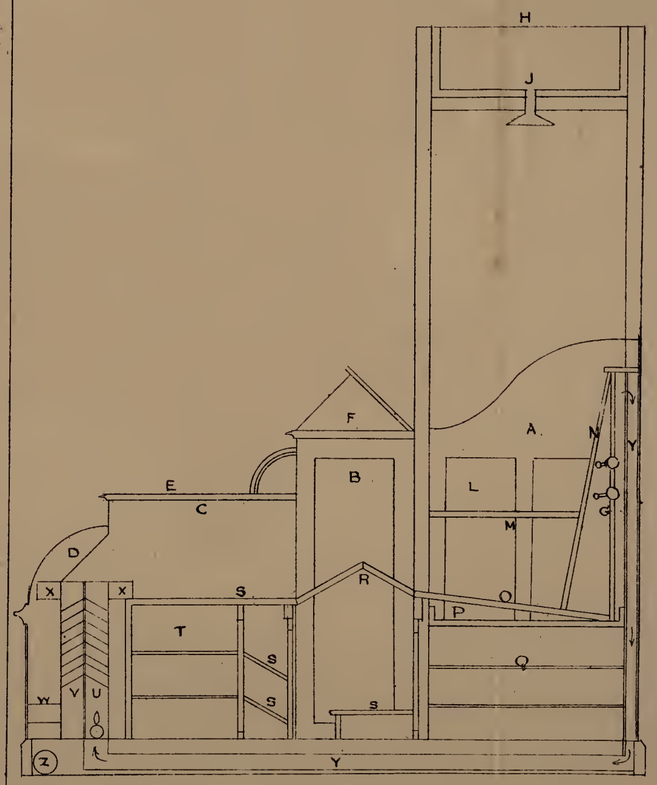
London : Printed for Her Majesty's Stationery Office, by Darling & Son, Ltd.—1890.

A.D. 1889. Feb. 18. N° 2868.
WEBBER'S Complete Specification.

(7 SHEETS)

SHEET 1.

SHEET 2.



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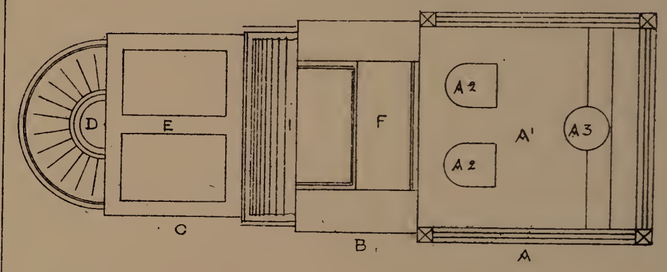

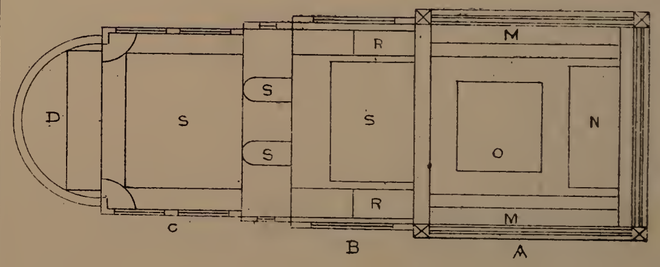

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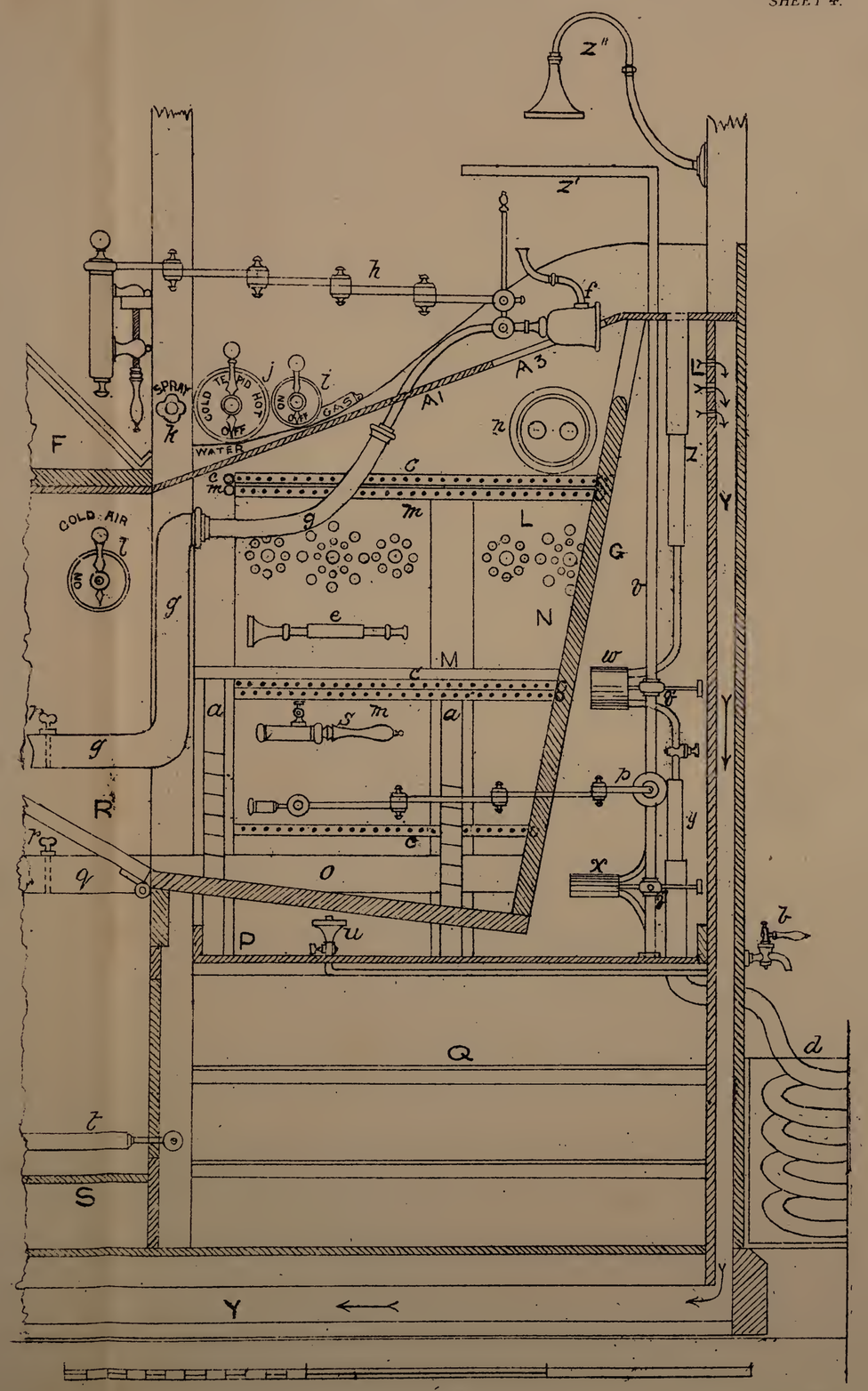

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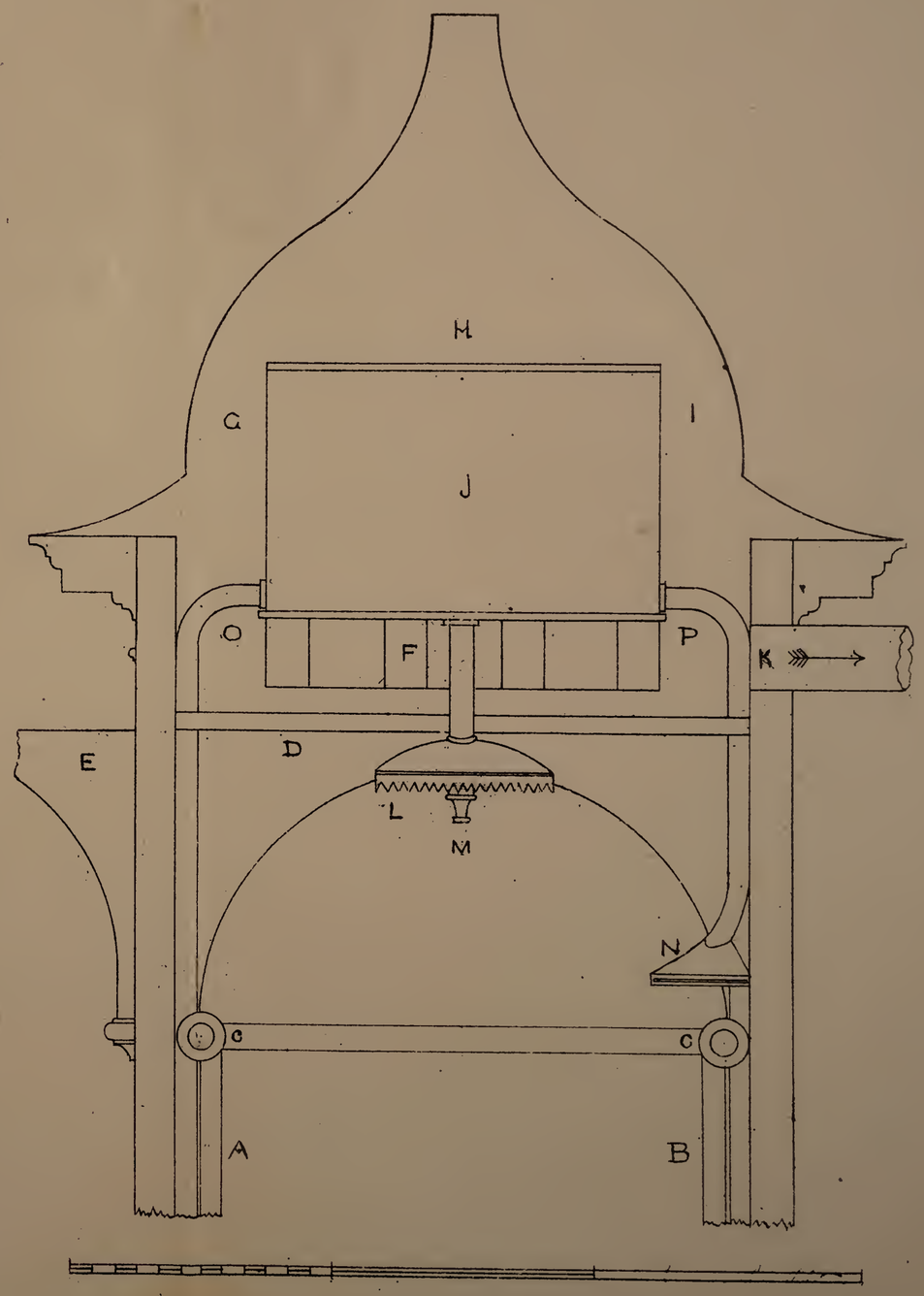

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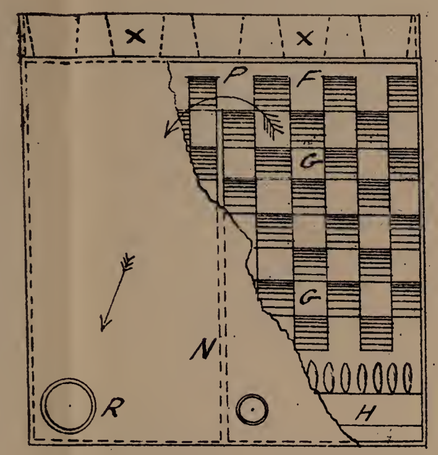

FIG B

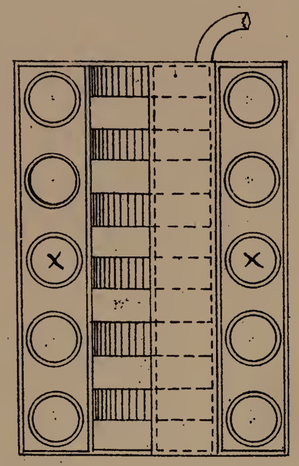

FIG A

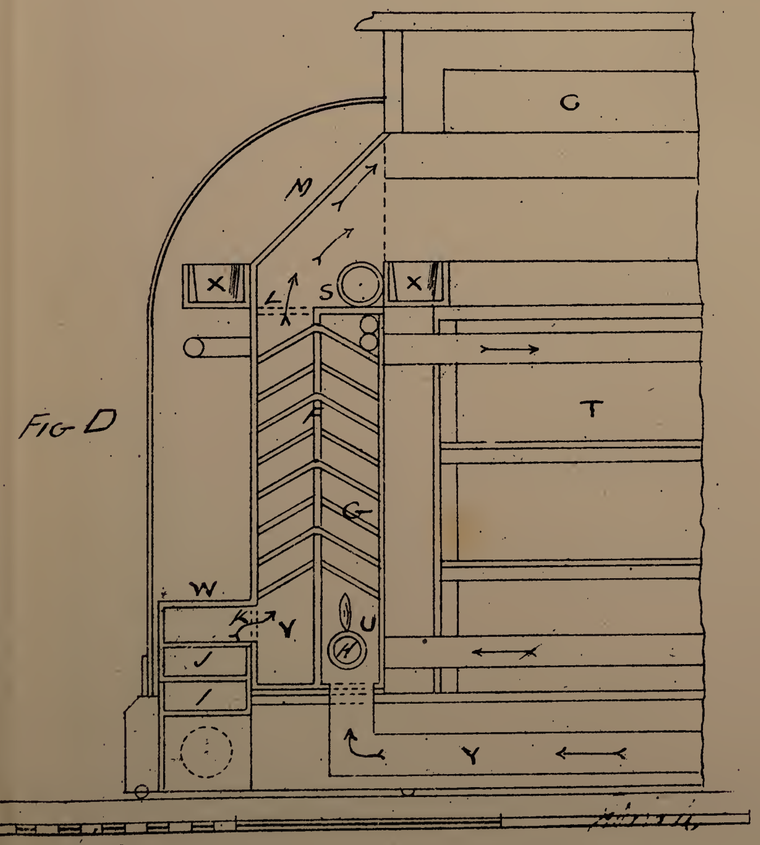

FIG D

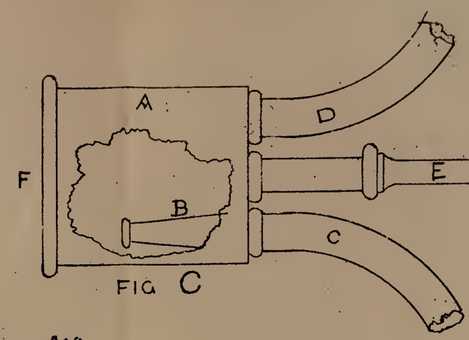

FIG C

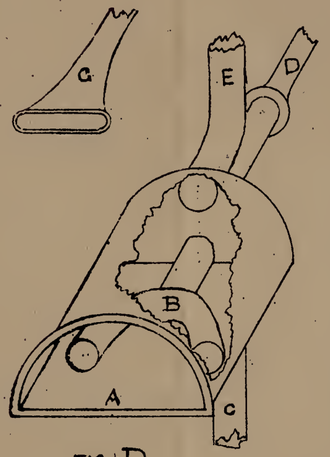

FIG D

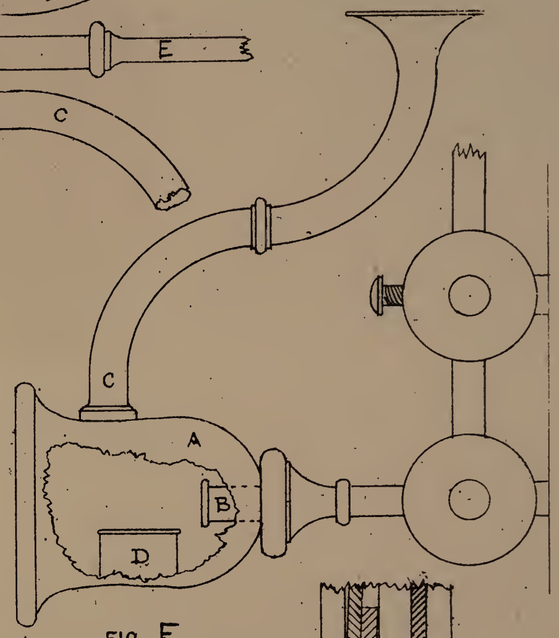

FIG E

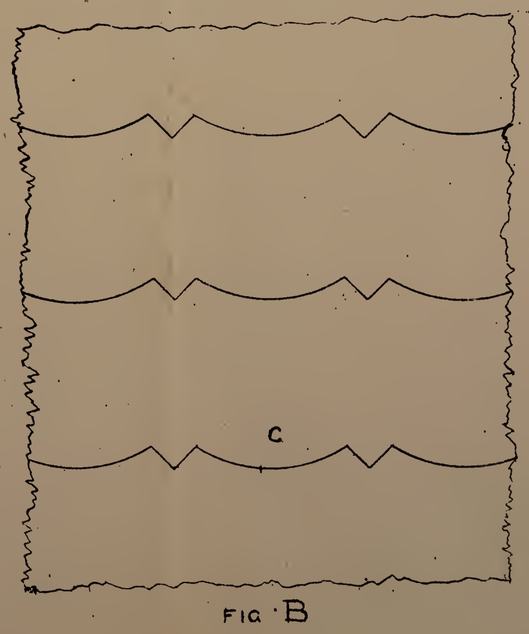

FIG B

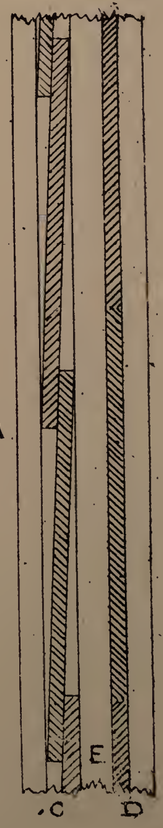

FIG A

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